2013

SDSU Cow/Calf Teaching and Research Unit

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BEEF 2013-08

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SUMMARY

The SDSU Cow/Calf Unit (CCU) is a multi-purpose facility that provides resources for Animal Science courses and research projects. Cattle produced at the facility are also utilized by Little International, Block and Bridle, and livestock judging teams. The facility is managed by Kevin Vander Wal and generally employs 4 to 5 undergraduate students.

BREEDING PROGRAM

Although the CCU has a multi-purpose mission, the breeding program is primarily centered on the production of bulls and females that can be used for teaching purposes and sold to the general public. Artificial insemination is used extensively. The program primarily utilizes proven sires; however, each year a percentage of the females are bred to younger, lower accuracy sires. The objective of the breeding program is to produce docile cattle that have excellent calving ease, growth, and carcass characteristics. Average expected progeny differences of the cows, heifers, and AI sires used in 2012 are included in Tables 1 and 2.

Table 1. Average expected progeny differences of Angus cows, heifers, and AI sires used in 2012.

	Expected progeny differences[a]									Value Indexes[b]	
	CED	BW	WW	YW	SC	Milk	Marb	REA	Doc	$W	$B
Cows	6.9	1.6	50.4	93.3	0.76	27.8	0.46	0.51	11.8	31.46	73.25
Heifers	7.3	1.6	53.9	99.1	0.80	28.7	0.46	0.60	12.8	31.52	77.69
AI sires	6.8	1.1	65.0	116.0	0.95	27.4	0.48	0.68	17.3	34.79	72.24

[a]CED = calving ease direct; BW = birthweight; WW = weaning weight; YW = yearling weight; SC = scrotal circumference; Milk = maternal milk; Marb = marbling score; REA = ribeye area; Doc = docility

[b]$W = wean value; $B = beef value

[1] The authors would like to acknowledge Zoetis Animal Health for product donations (Eazi-Breed CIDRs, Lutalyse, and Factrel) toward the synchronization research projects. Salaries and research support also provided by state and federal funds appropriated to South Dakota State University.

Table 2. Average expected progeny differences of SimAngus™ cows, heifers, and AI sires used in 2012.

	Expected progeny differences[a]								Indexes[b]	
	CE	BW	WW	YW	MLK	Marb	REA	Doc	API	TI
Cows	14.6	-1.3	56.3	92.9	23.0	0.51	0.64	11.7	140.0	74.4
Heifers	14.2	-1.5	62.8	101.8	25.1	0.45	0.83	11.3	140.3	75.6
SimAngus™ AI Sires	16.7	-4.3	39.3	74.0	6.7	0.67	0.62	15.0	163.3	85.7
Simmental AI Sires	9.8	-0.64	48.4	88.2	0.6	0.35	0.71	10.4	132.4	80.0

[a]CE = calving ease; BW = birthweight; WW = weaning weight; YW = yearling weight; MLK = milk; Marb = marbling score; REA = ribeye area

[b]API = all-purpose index; TI = terminal index

REPRODUCTIVE PERFORMANCE

In 2012, 110 cows and 41 heifers were bred using one of two synchronization protocols. All of the females are bred at least one time via artificial insemination (AI) and followed by clean-up bulls. The females were synchronized using the 7-day CO-Synch + CIDR protocol with or without an injection of prostaglandin $f_{2\alpha}$ (Lutalyse) on the day the CIDR was inserted (Figure 1).

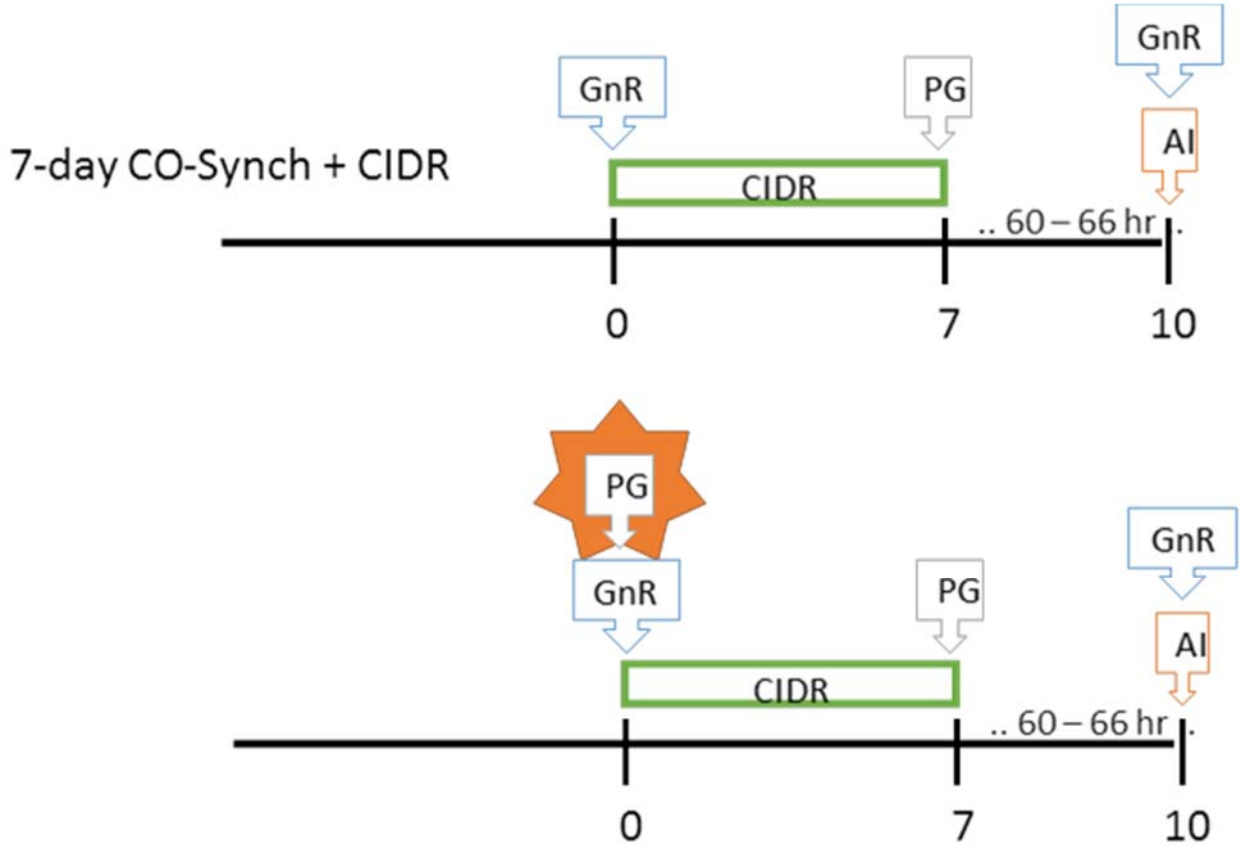

Figure 1. 7-day CO-Synch + CIDR synchronization protocol used on cows and heifers during the 2012 breeding season. The females either did or did not receive an injection of prostaglandin $f_{2\alpha}$ (Lutalyse) on the day of CIDR insertion. GNR = gonadotropin releasing hormone.

Regardless of treatment, the cows achieved an overall 57.3% first service conception rate (60.0% and 54.5%, for with and without prostaglandin $f_{2\alpha}$, respectively) to timed AI. The overall first service conception rate among the heifers pregnancy rates was 58.5% (52.4% and 65.0%, for with and without prostaglandin $f_{2\alpha}$, respectively).

SALES

Each April, the SDSU Seedstock Merchandising class coordinates an annual bull sale at the CCU. The sale is designed to be a learning experience for the students and they are responsible for advertising, promotional videos, developing the sale catalog, and customer service. In 2013, the bull sale attracted customers from SD, IA, and MN. The sale included 20 Angus and 11 SimAngus™ yearling bulls. Results of the sale are presented in Table 3.

Table 3. Results from 2013 annual bull sale.

	Lots	Average	Range
Angus bulls	20	$4425.00	$2500-$7900
SimAngus™ bulls	11	$3781.82	$3000-$5500
Overall bull average	31	$4196.77	
Sire groups			
Connealy Consensus 7229	1	$3900.00	
Hooks Shear Force 38K	2	$3500.00	
Hoover Dam	3	$5866.67	
MR NLC Upgrade U8676	5	$3920.00	
S A V Bismarck 5682	1	$4400.00	
S Chisum 6175	1	$2500.00	
S D S Graduate 006X	2	$3300.00	
Sitz Upward 307R	1	$4000.00	
TNT Tanker U263	2	$4200.00	
VAR Rocky 80029	7	$3714.29	
WK Power Up 9412	6	$5016.67	

NEW FACILITY

The current CCU was built in 1950 and, while it is a functional facility for managing a cowherd, it has significant limitations as a teaching and research facility. One of the components of the Land-Grant mission is teaching. Our objective is to provide our students with the best education possible and a large component of educational process is experiential learning…learning by doing. The current facility is not well equipped to provide a positive learning experience to students. A second component of the Land-Grant mission is research. Conducting research that answers production related questions and provides new technology to producers is essential to the long-term viability of the beef industry in South Dakota. Other than a small group of replicated pastures, the current CCU is not equipped to support research. The final component of the Land-Grant mission is Extension and outreach. Effective transfer of new knowledge and technology from the university to end users allows for the most current research findings to be adopted by the industry. Our current facility is not conducive to utilization by Extension personnel for meetings or demonstrations.

Plans are in place to build a new facility near campus to support the teaching, research, and Extension efforts in beef cattle production. The new facility will be equipped with individual feeding units that will allow for collection of individual feed intake and application of individual treatments to cattle within the same pen. This equipment will greatly enhance the ability of the facility to support numerous types of research in nutrition, genetics, reproduction, health, and others without having to expand the current cowherd. It will also be constructed to facilitate biosecurity of the cattle fed there. We will be able to facilitate both feedlot cattle and our own cattle in the facility at the same time. The facility will also enhance our ability to teach and conduct Extension and outreach activities. It will be equipped with a classroom and an indoor working facility to allow students and producers to be exposed to hands-on learning experiences throughout the year. An image of the proposed facility is presented in Figure 2.

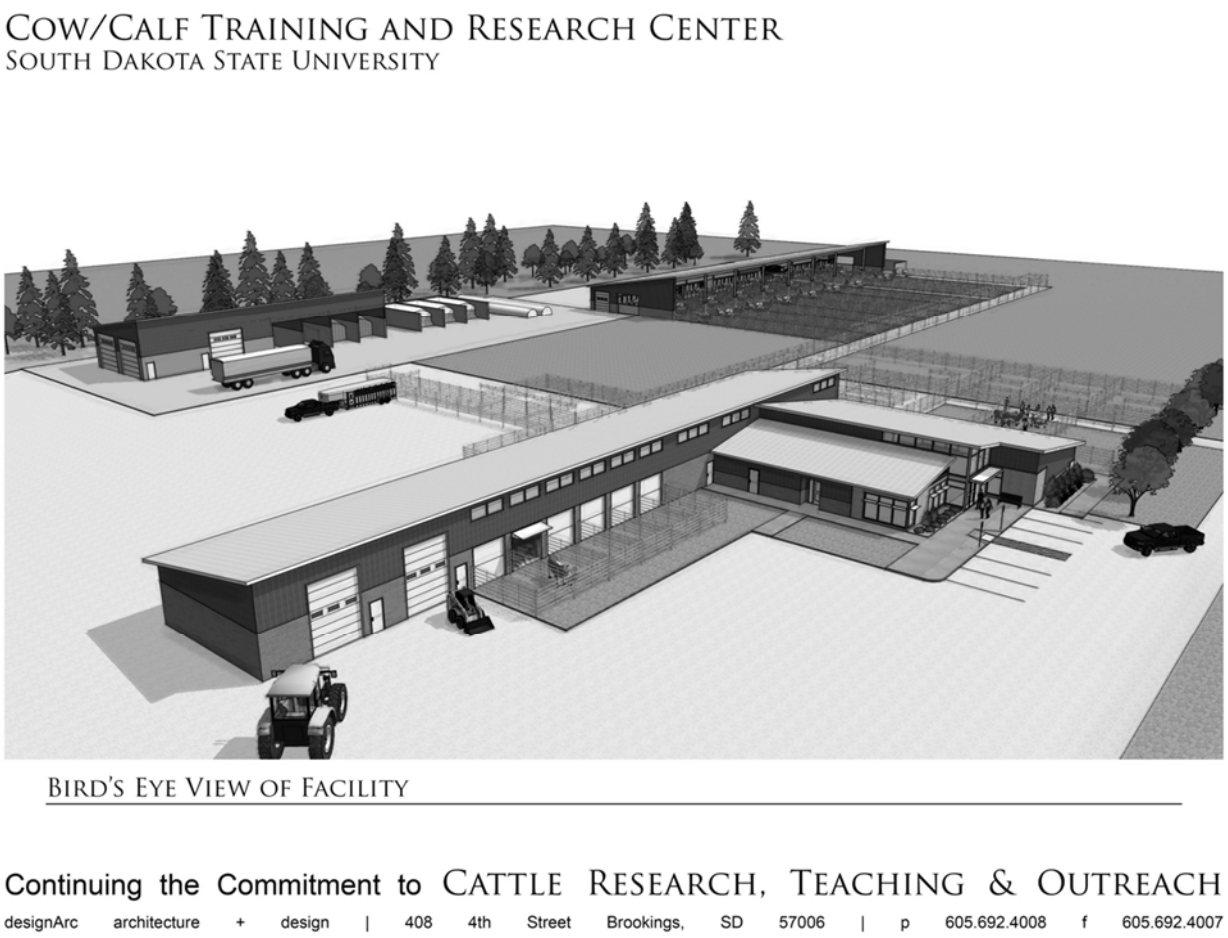

Figure 2. Proposed new cow-calf facility. Image courtesy of DesignARC.

At the time of publication of this document, we are approximately $1.6 million short of our goal. Numerous families and corporate partners have made incredibly generous commitments to the project, but we still need more financial commitments before we can break ground on this facility. If you would like to receive more information on the new facility or if you are interested in contributing to the project, please contact Dr. Cody Wright (cody.wright@sdstate.edu; 605-688-5448) or Mike Barber at the SDSU foundation (mike.barber@sdsufoundation.org; 605-697-7475).